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ELP ELP-USBFHD01M-L21

ELP USB Security Camera Module (Model ELP-USBFHD01M-L21) Instruction Manual

Brand: ELP | Model: ELP-USBFHD01M-L21

1. Introduction

This manual provides comprehensive instructions for the ELP USB Security Camera Module, Model ELP-USBFHD01M-L21. It covers product features, setup procedures, operational guidelines, maintenance tips, troubleshooting, and detailed specifications to ensure optimal performance and longevity of your device. This camera module is designed for various applications requiring high-definition video capture and broad compatibility.

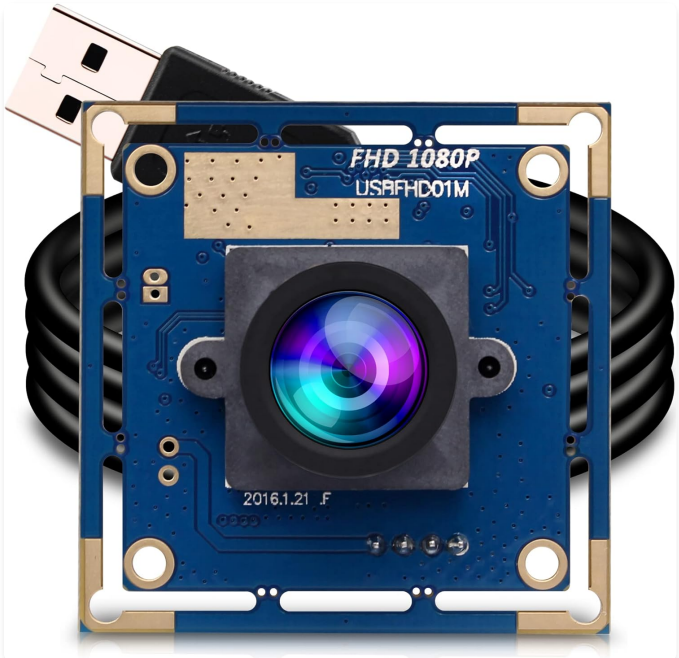

Figure 1: ELP USB Security Camera Module with attached USB cable.

2. Safety Information

Please use the ELP USB camera module in accordance with the instructions provided in this user manual. Failure to do so may result in damage to the device or improper operation. Keep the device away from moisture, extreme temperatures, and direct sunlight. Avoid dropping or subjecting the module to strong impacts. Do not attempt to disassemble or modify the camera module, as this will void the warranty and may cause damage.

3. What's in the Box

- 1x ELP USB Camera Module
- 1x 1-meter USB Cable
- 1x User Manual

4. Setup

4.1. Connecting the Camera Module

The ELP USB Camera Module is designed for plug-and-play functionality, requiring no additional driver installation for most compatible operating systems. Simply connect the provided 1-meter USB cable to the camera module and then to an available USB 2.0 port on your host device.

Figure 2: Camera module connected to a laptop via USB.

Figure 3: Camera module connected to a Raspberry Pi.

4.2. System Compatibility

The camera module is UVC (USB Video Class) compliant, ensuring broad compatibility with various operating systems without the need for specific drivers. Supported systems include:

- Windows XP, Vista, 7, 8, 10, 11
- Linux with UVC
- Mac OS X 10.4.8 or later
- Android 4.0 or above (with OTG support)
- Raspberry Pi development boards
- Jetson Nano

4.3. Software Usage

For basic functionality, standard webcam applications on your operating system should recognize the ELP USB Camera Module. For advanced settings and parameter adjustments, you may use third-party software like Amcap (for Windows) or other compatible UVC applications. These applications typically allow you to:

- Select resolution and frame rate.
- Adjust image parameters such as Brightness, Contrast, Saturation, Hue, Sharpness, Gamma, White Balance, and Exposure.

Figure 4: Plug & Play functionality and adjustable image parameters.

5. Operating the Camera Module

5.1. Video Capture

The camera module supports various resolutions and frame rates, making it versatile for different video capture needs:

- **High Frame Rate:** Up to 120fps at 640x480, 60fps at 1280x720, and 30fps at 1920x1080 (Full HD).
- **Resolution:** 2-megapixel high pixel technology for sharp images and accurate color reproduction.
- **Low Light Performance:** Designed to perform well in various lighting conditions.

Figure 5: High frame rate capabilities of the camera module.

5.2. Wide Angle Lens

The module features a 2.1mm HD wide-angle lens, providing a broad field of view suitable for capturing larger areas or for applications requiring a comprehensive perspective.

5.3. Global Shutter Technology

Some ELP camera modules incorporate global shutter technology, which exposes all pixels in the image simultaneously. This is particularly beneficial for capturing fast-moving objects without distortion, such as rolling shutter artifacts. This results in smoother and clearer images, especially in dynamic environments.

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Video 1: Demonstration of ELP Global Shutter USB Camera Module capturing fast-moving objects without distortion.

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Video 2: ELP 180-degree Fisheye Lens 1080p Wide Angle Web USB Camera in action.

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Video 3: ELP 3.6mm lens USB camera with CMOS OV2710 sensor demonstrating 100fps capture.

5.4. Applications

The ELP USB Camera Module is suitable for a wide range of applications, including but not limited to:

- Industrial Automation and Machine Vision
- Eye Tracking Devices
- Golf Swing Analysis and Golf Simulators
- High-Speed Video Shooting
- Military Parade Recording
- Sports Event Capturing
- Robotics
- Virtual Reality (VR)
- Real-time Monitoring
- License Plate Recognition for Moving Vehicles
- Conveyor Belt Parts Inspection

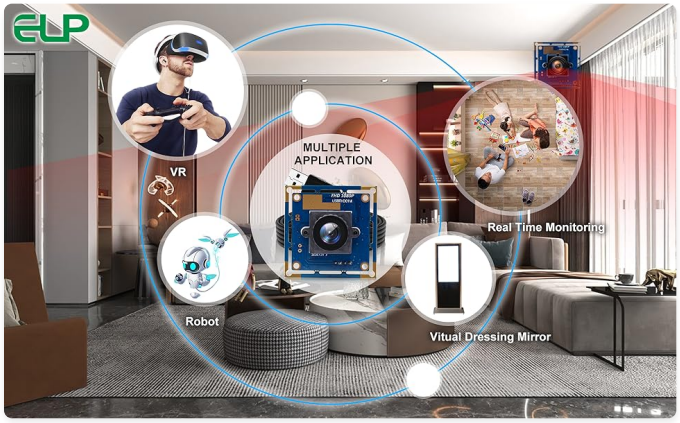

Figure 6: High-speed capture capabilities for dynamic applications.

Figure 7: Diverse applications of the camera module.

6. Maintenance

To ensure the longevity and optimal performance of your ELP USB Camera Module, follow these maintenance guidelines:

- **Cleaning:** Use a soft, dry cloth to clean the camera lens and module body. For stubborn smudges on the lens, use a lens cleaning solution specifically designed for optical surfaces and a microfiber cloth. Avoid abrasive materials or harsh chemicals.
- **Storage:** When not in use, store the camera module in a cool, dry place, away from direct sunlight and extreme temperatures. Protect it from dust and moisture.
- **Handling:** Handle the module with care. Avoid touching the lens surface directly with your fingers.

7. Troubleshooting

If you encounter issues with your ELP USB Camera Module, refer to the following common troubleshooting steps:

- **No Image/Device Not Recognized:**
  - Ensure the USB cable is securely connected to both the camera module and the host device.
  - Try connecting to a different USB port on your device.
  - Test the camera module on a different computer or compatible device to rule out host system issues.
  - Verify that your operating system's privacy settings allow applications to access the camera.
- **Poor Image Quality:**

- Check for dirt or smudges on the lens and clean if necessary (refer to Maintenance section).
- Ensure adequate lighting in your environment.
- Adjust image parameters (Brightness, Contrast, etc.) using compatible software.
- Verify that the correct resolution and frame rate are selected in your software.

- **Lag or Choppy Video:**
  - Ensure your host device meets the minimum system requirements for video processing.
  - Close other demanding applications running in the background.
  - Try a lower resolution or frame rate setting.
  - Ensure you are using a USB 2.0 compatible port and cable.

8. Specifications

Feature	Detail
Product Dimensions	4.8 x 4.8 x 2.8 inches
Item Weight	0.352 ounces
Item Model Number	ELP-USBFHD01M-L21
Photo Sensor Technology	CMOS
Video Capture Resolution	1080p
Maximum Focal Length	40 Meters
Maximum Aperture	2 f
Flash Memory Type	SD
Video Capture Format	MPEG
Screen Size	2.7 Inches
Connectivity Technology	USB
Color	2.1mm Lens
Manufacturer	Ailipu Technology Co., Ltd
Date First Available	May 12, 2014

Figure 8: Detailed technical specifications of the camera module.

9. Warranty and Legal Disclaimer

ELP USB Camera Module (Model ELP-USBFHD01M-L21) is provided as described. Please refer to the product packaging or official ELP website for specific warranty terms and conditions. Any implied warranties are limited to the duration of the express warranty provided. The manufacturer is not responsible for any damages or losses resulting from improper use, modification, or failure to adhere to the instructions in this manual.

10. Support

For further assistance, technical support, or inquiries regarding your ELP USB Camera Module, please visit the official ELP website or contact their customer service department. Contact information can typically be found on the product packaging or the manufacturer's website.

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